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Framework for integrated natural disaster impact assessment: Lessons from Typhoon Haiyan (Yolanda)

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Objectives

1. To identify 2 challenges of natural disaster impact assessment (NDIA).
2. To describe the 7 steps of the proposed NDIA framework.
3. To identify 3 types of NDIA indicators.
4. To describe 1 lesson learned from Typhoon Haiyan.

Contents

1. Problem, background, purpose
2. Methods
3. Results
4. Integrated natural disaster impact assessment (NDIA) framework
5. Application of integrated NDIA framework to Typhoon Haiyan
6. Discussion
7. Next steps

1. Problem

- Natural disasters are complex and difficult to manage.
- Existing impact assessment methodologies are inadequate in measuring, and thus, controlling, the effects of natural disasters.

1. Background



- What are the challenges of natural disaster impact assessment?
- What are the existing IA methodologies? Why are they inadequate?
- Why is a new model needed?
→ ineffective disaster impact assessment = ineffective disaster management

1. Purpose

- To examine the state of the evidence about natural disaster impact assessment
- To develop an integrated framework based on the findings
- To apply this framework to assess the impacts of Typhoon Haiyan

2. Methodology

- Literature review
- Medline (PubMed) & Google Scholar databases; websites of international organizations, NGOs, Philippine & U.S. governments
- Search terms: natural disaster, disaster management / recovery, typhoon (Haiyan / Yolanda), Philippines, impact assessment, framework / methodology, environment / health / social / socioeconomic / public health impact, health, death, injury, missing / displaced, vulnerable

3. Results

Reviewed: 63 total

- Three study topics
 - IA methodology - 34
 - Disasters - 9
 - Typhoon Haiyan - 20

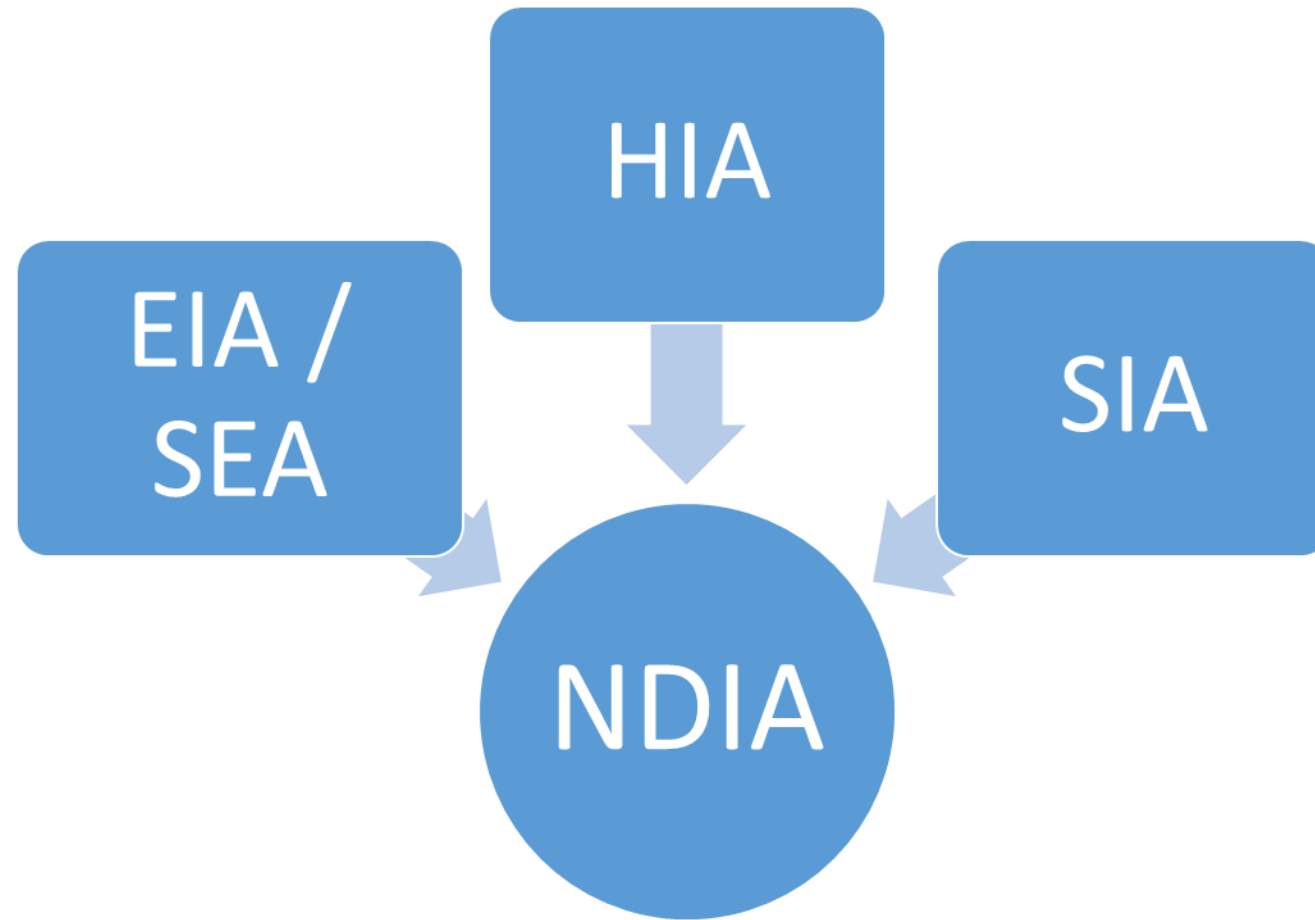
Data sources

- Scholarly articles (original research, reviews, case studies)
- Field, situation & technical reports
- Policy documents
- News articles
- Maps & satellite images

3. Results

- IA methodology
 - 6 - 8 steps; use IA as tool to help with decision making
 - themes: public engagement, transparency, sustainability
- Natural disasters
 - no universally accepted framework for natural disaster impacts
 - no consistent definitions of “disaster” and “environment”
- Impacts of typhoon Haiyan
 - “Vital statistics” on affected population
 - Wide variety of impacts related to environment, health, and socioeconomic factors

4. Integrated NDIA framework: model



4. Integrated NDIA framework: purpose and use

What is the purpose?

- To assess disaster impacts
- To facilitate disaster management
- To achieve impact of preventing further death and destruction

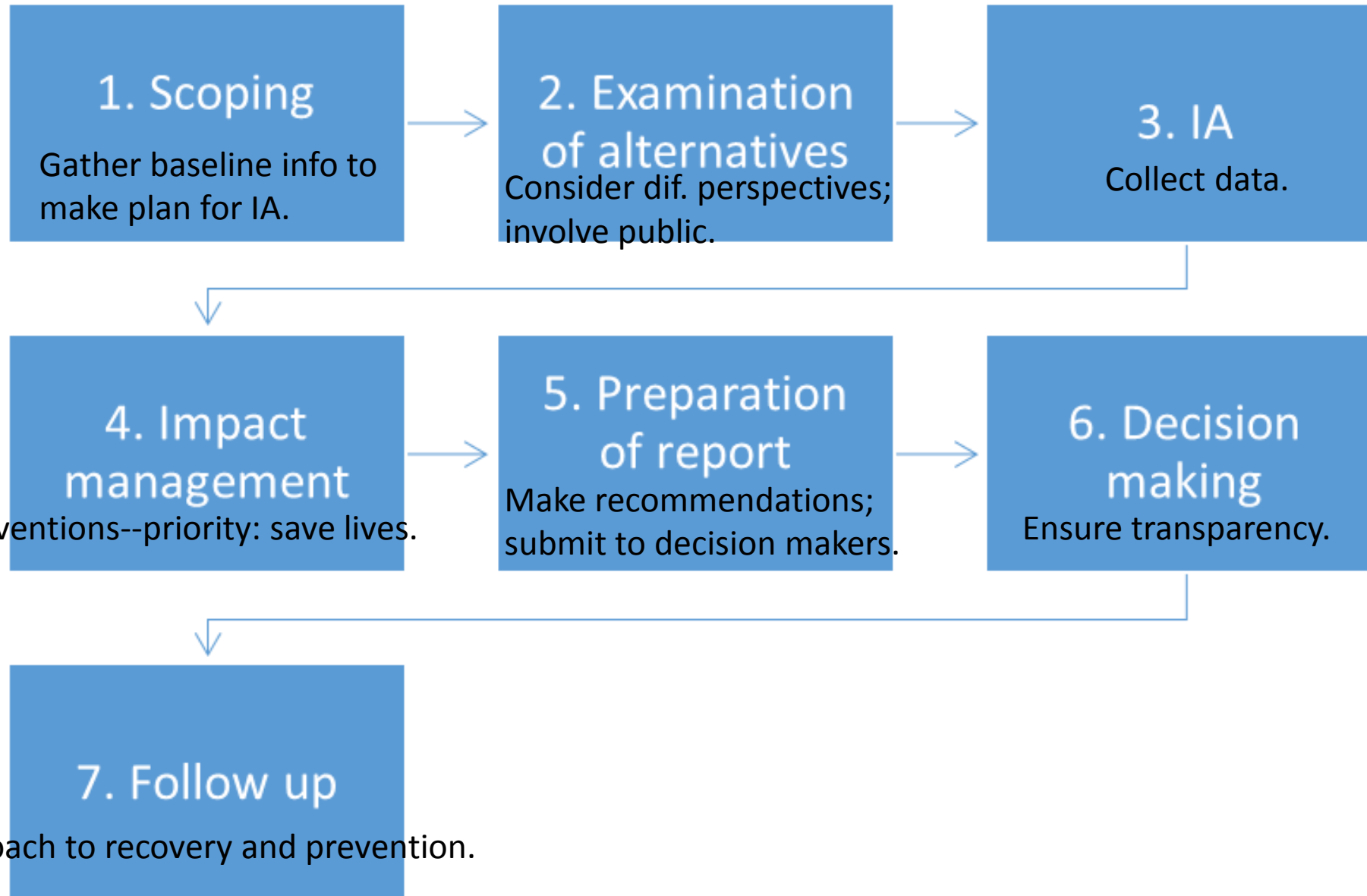
Who will use it and when?

- Stakeholders across multiple sectors
- Aid organizations / donors
- During disaster planning
- Pre- and post-disaster

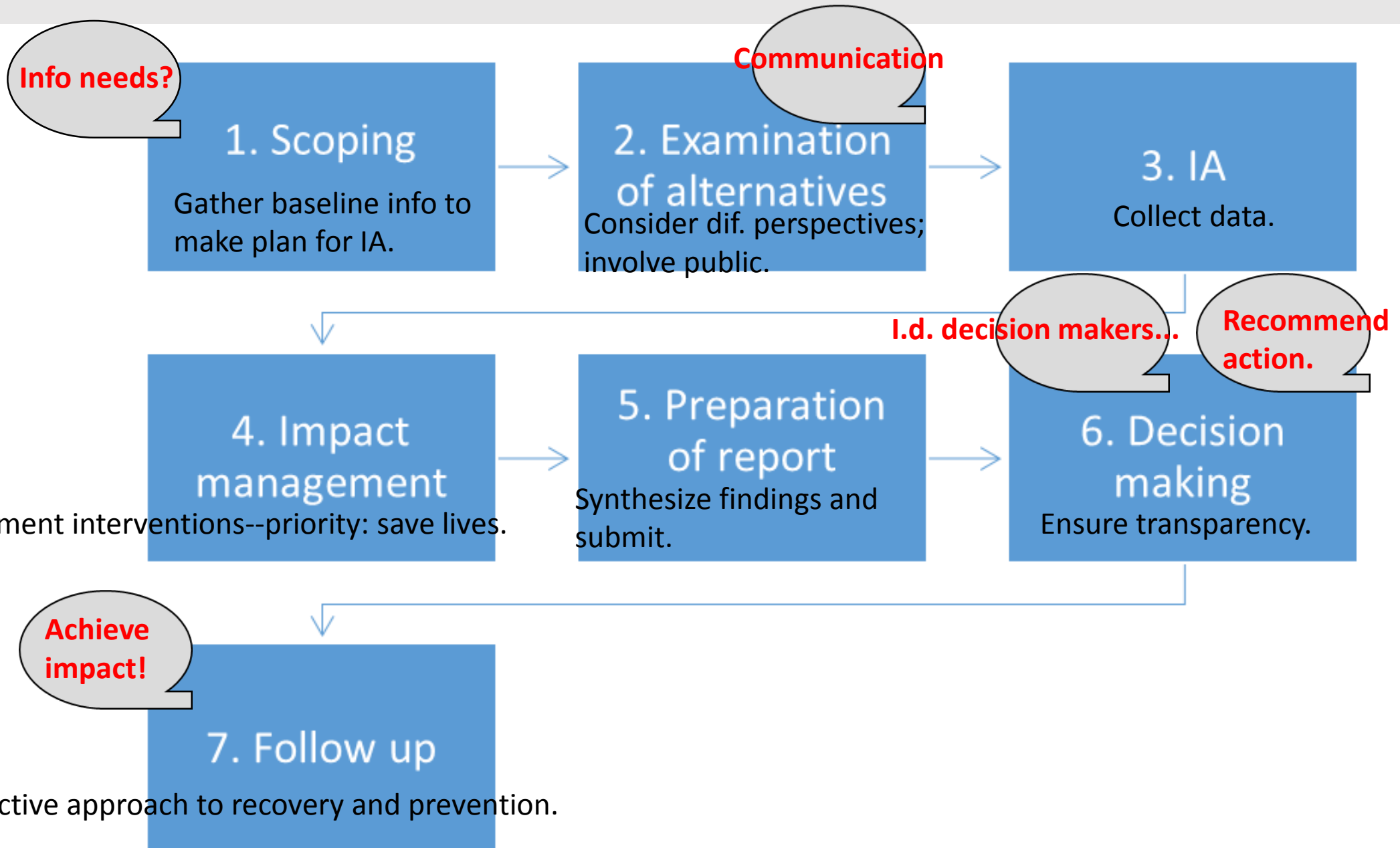
4. Integrated NDIA framework: indicators

Origin	Impacts	Indicators
EIA / SEA	<ol style="list-style-type: none">1. Air quality2. Water quality3. Flora / fauna destruction	<ol style="list-style-type: none">1. Monitor PM 10 concentration2. Number of bacteria3. Number of trees damaged / destroyed
HIA	<ol style="list-style-type: none">1. Morbidity2. Mortality3. Infectious disease prevalence	<ol style="list-style-type: none">1. Number of injuries2. Number of deaths3. Number of cases (e.g. diarrhea)
SIA	<ol style="list-style-type: none">1. Displacement2. Housing damage3. Financial cost of damage	<ol style="list-style-type: none">1. Number of individuals displaced2. Number of dwellings damaged3. Overall cost of damage across sectors

4. Integrated NDIA framework: 7 steps



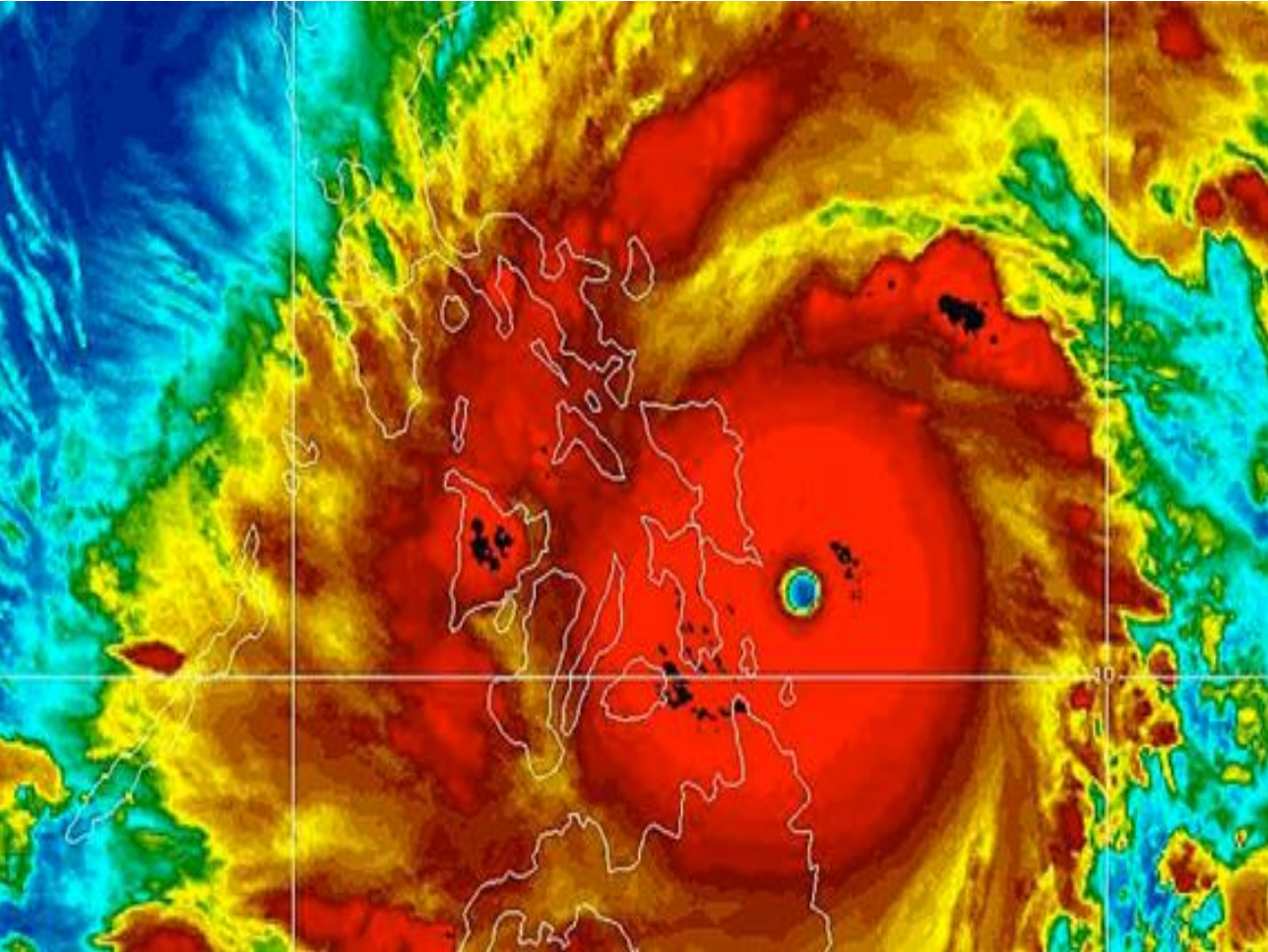
4. Integrated NDIA framework: 7 steps



4. Integrated NDIA framework: Methods of integration

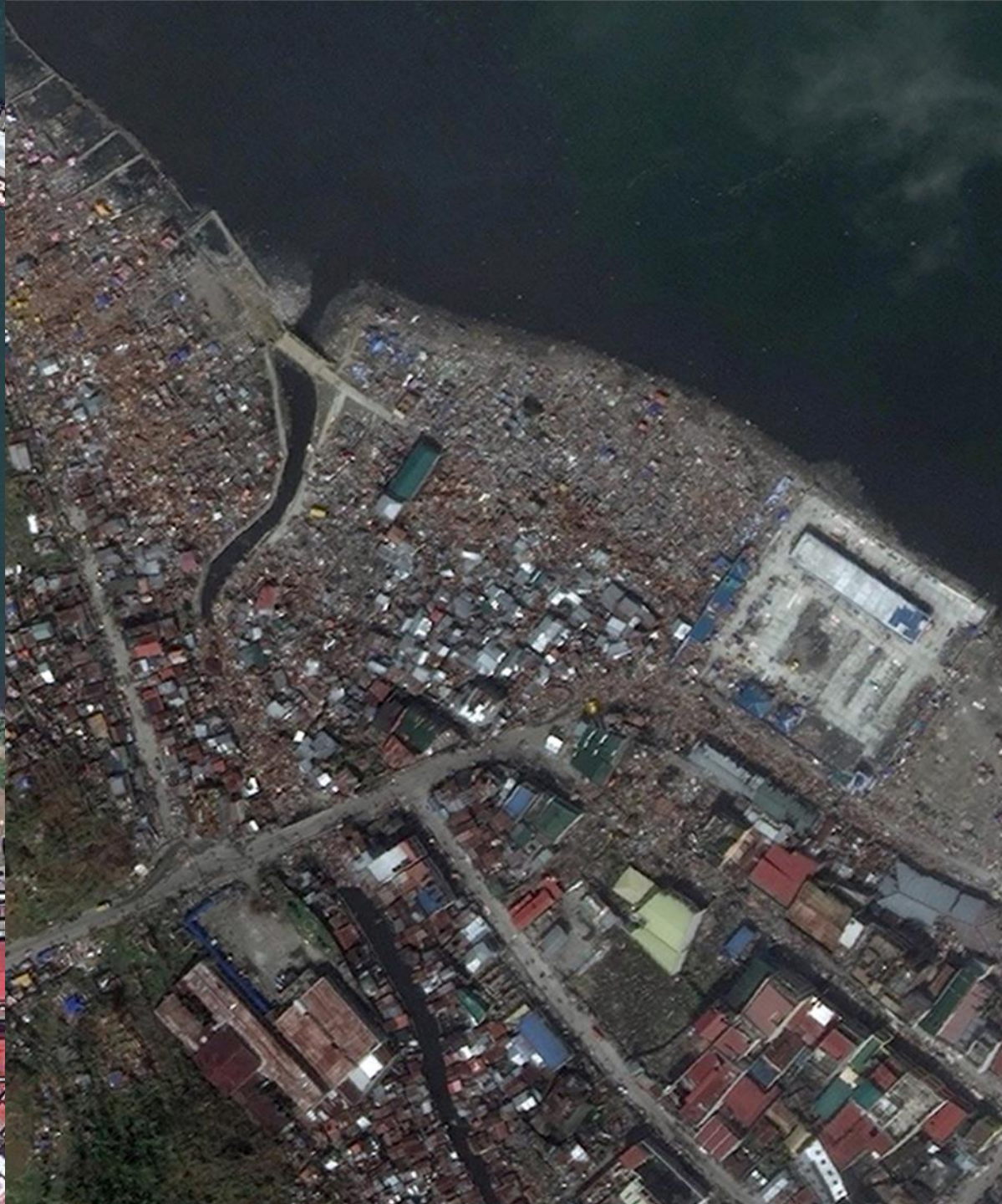
- Stakeholder engagement: start early and maintain contact
 - Assess needs of stakeholders
 - Use findings from needs assessment to plan & implement NDIA
- Develop policy for routine meetings / consultations to exchange feedback
- Develop online platform for sharing knowledge and communicating progress; utilize social media
- Ensure that someone is personally responsible for development of integrated NDIA report

5. Application to Typhoon Haiyan



- 16+ million affected people
- 28,689 injuries
- 6,300 deaths
- 4+ million displaced individuals
- 1+ million homes destroyed
- \$2+ billion USD cost of damage

From: NDRRMC, 2014



5. Application to Typhoon Haiyan: Steps 1 & 2

1. Scoping

Info needed:

- environmental impacts
- health impacts
- social impacts



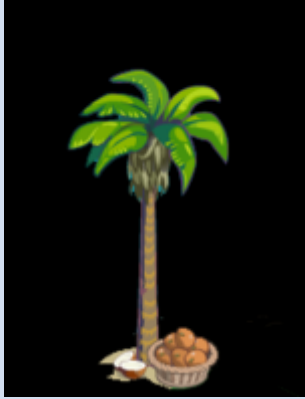


2. Examining alternatives

- No-action
- All-action (optimal disaster management)
- Some-action A (less optimal disaster management)
- Some-action B (suboptimal disaster management)



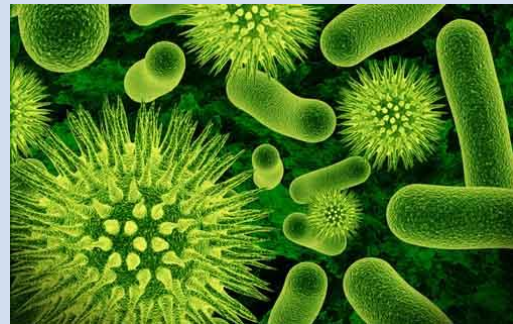



5. Application to Typhoon Haiyan: Step 3, Impact assessment

IA type	Sample IA activities
EIA / SEA	<ul style="list-style-type: none">- Assessment of water supply; sea surface water sampling- Assessment of agriculture (shellfish sampling for pollutants) & livestock damage
HIA	<ul style="list-style-type: none">- Assessment of injuries & deaths- Assessment of WASH
SIA	<ul style="list-style-type: none">- Assessment of number of displaced individuals- Number of houses damaged / destroyed

5. Application to Typhoon Haiyan: Step 3, Impact assessment

IA type	Key findings		
EIA / SEA			
			

5. Application to Typhoon Haiyan: Step 3, Impact assessment

IA type	Key findings		
HIA	 	 	 

5. Application to Typhoon Haiyan: Step 3, Impact assessment

IA type

Key findings

SIA



5. Application to Typhoon Haiyan: Step 4, Impact management



5. Application to Typhoon Haiyan: Step 5, Prepare IA report

Reports:

- UN OCHA: “Environmental Assessment. Final Report and Recommendations. Haiyan/Yolanda Response”
- UNEP / OCHA: “Oil Spill Technical Report. Typhoon Haiyan/Yolanda. Estancia, Iloilo Province, Philippines”
- UNHCR: “Protection needs assessment: Final results and analysis”
- Global Shelter Cluster: “Shelter sector response monitoring. Typhoon Haiyan, Philippines, 2013. Final Report: Monitoring Assessment 2”; “Shelter and WASH rapid assessment: Final Report”



5. Application to Typhoon Haiyan: Steps 6, Decision making

- 9 Task Forces with Leads (e.g. Logistics, Food & Water Distribution)
- Executive Committee and Council meetings
- Transparency initiative - information updates by the National Disaster Risk Reduction and Management Council (NDRRMC)

5. Application to Typhoon Haiyan: Step 7, Follow up



5. Application to Typhoon Haiyan: Step 7, Follow up



- Recovery & rehabilitation
- On-going monitoring & reporting
- Evaluation

6. Discussion: Evaluation of NDIA framework

Strengths

- allows for comprehensive IA by integrating EIA/SEA, HIA, and SIA
- approach is holistic, soliciting input from various stakeholder groups across sectors
- promotes sustainable development
- supports community resilience; takes vulnerabilities into account

Limitations

- greater resource and expertise requirements
- difficult to achieve and maintain quality control
- possible conflict due to differences in priorities
- based on assumption that disaster management plan already in place

6. Discussion: Evaluation of NDIA framework

Strength: consistent with existing policy

Republic Act 10121, “The Philippines disaster risk reduction and management act”, Section 2. (d):

“...adopt a disaster risk reduction and management approach that is holistic, comprehensive, integrated, and proactive in lessening the socio-economic and environmental impacts of disasters including climate change, and promotes the involvement and participation of all sectors and all stakeholders concerned, at all levels, especially the local community.”

6. Discussion: Lessons learned

- Need better enforcement of disaster management policy
- “Build back better” - 8 key messages
- “If there is one important lesson that the rest of the world can learn from our experience with Yolanda, it is that we cannot make rules and expect all situations to adapt to them - especially when we are dealing with disasters.” (Secretary Baliscan, Asia Europe Manila Conference on Disaster Risk Reduction and Management, June 5, 2014)



7. Next steps



Promote health & prevent disease long term.



Rebuild livelihoods, homes, & infrastructure.



Ensure aid reaches all victims.



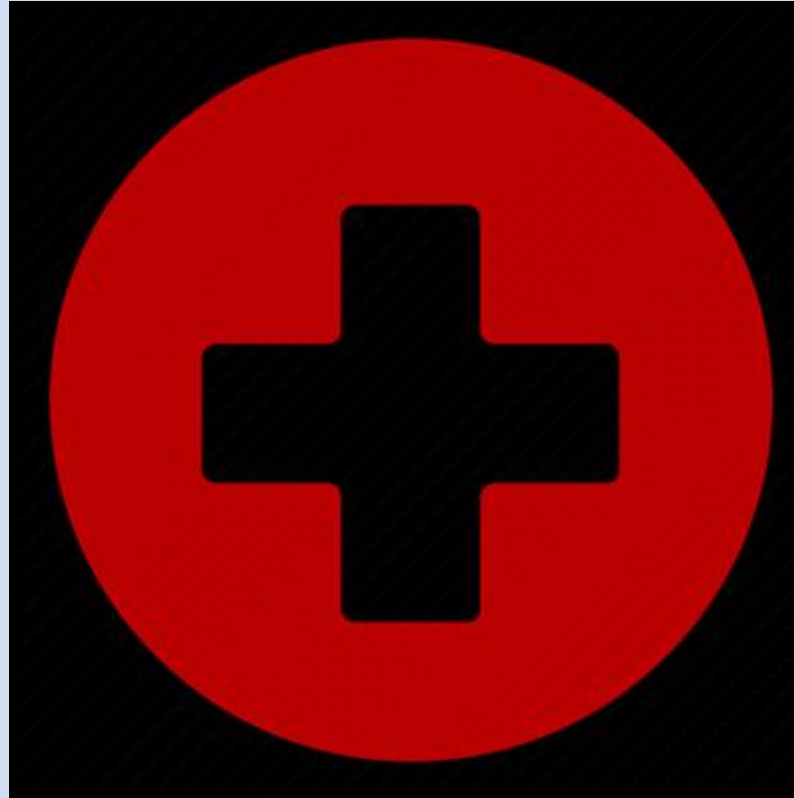
Prepare for next natural disaster.

7. Next steps - Recommendations

Environment

Health

Socioeconomic /
development



7. Next steps: Future research

- Assess validity & reliability of integrated NDIA framework.
- Assess impact of humanitarian relief effort.
- Epidemiological surveys
 - Exposure: Typhoon Haiyan
 - Outcome: Mental health outcomes
- Environmental health studies
 - Exposure: Hazards (e.g. inadequate hygiene/sanitation, toxins)
 - Outcomes: Physical health outcomes



“Our home was washed away so we had nothing for the baby, not even clothes. We cut some blankets into pieces of cloth to wrap the baby. We named in Cavein Cuevas Caramol, because he was born in a cave.”





- “...It's [fishing] not as easy as before. The typhoon left a big hole in our small paddle boat and destroyed parts of our fishing nets. They're beyond repair.”
- “I do worry about our future. A storm like that could happen again, and next time we may not survive.”

Source: <http://www.trust.org/item/20141106074931-m4jnx/>

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Thank you very much! Grazie mille!
Maraming salamat sa inyo!